

## METHODS FOR FACILITATING THE DESIGN AND INSTALLATION OF CUSTOM HOME NETWORKING SYSTEMS

### FIELD OF THE INVENTION

The present invention relates to selecting and installing telecommunications, entertainment, and security systems in new and existing homes.

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### BACKGROUND OF THE INVENTION

Increasingly, existing homes and homes under construction are being "networked" wherein communications cables (video, data, and telecommunications cables) are being extended to many rooms and, in some cases, to multiple locations within a room. The benefits of "home networking" may include the ability to network multiple computers, printers and peripherals throughout a home and to access the Internet through a single high-speed connection; to watch an internally modulated video signal such as a video cassette recorder (VCR), digital video disk (DVD), or satellite television receiver from any room in the home; to use a digital phone system, such as an ISDN line, throughout the home; to add security video cameras in the home and view them on any television; and to add future equipment that may allow a homeowner to use the same hand-held remote control in any room.

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Home networking typically requires the use of a central distribution panel which serves as a gateway or interface to various communications, entertainment, and/or security services. Within these central distribution panels, cable distribution modules are typically utilized to receive a cable from a service provider and distribute the service provided among various communications cables that are routed throughout the home. For example, a video cable distribution module may be configured to receive a cable from a cable TV service provider and

distribute the signal to multiple cables routed within a home. Cable distribution modules may be amplified or non-amplified to divide signals to multiple communications cables, depending upon the number of communications cables involved.

5 An exemplary central distribution panel **10** is illustrated in  
**Fig. 1.** With the exception of electric power, communications services entering a home are typically routed into the central distribution panel **10**. From the central distribution panel **10**, distribution cables **12** and, consequently, the services they provide, are routed to wall taps (outlets) or devices in various locations throughout a home. Conventionally, the service provided at a particular outlet or device is determined by the cable's connection in the central distribution panel **10**. For example, if an outlet is connected to a computer networking hub, a computer networking service is provided at the outlet. By moving the connection in the central distribution panel **10** from the computer networking hub to a telecommunications module, the service at the outlet may be changed to telephone service.

10 The emergence of home networking and its rapid adoption by home owners has placed a new set of demands on builders, architects and designers of homes (collectively referred to herein as "home builders"). Conventionally, separate contractors are utilized to design and install security systems, telecommunication systems and entertainment systems, respectively, within a home. With regard to new construction, each separate contractor coordinates its respective schedule with that of a home builder. Because of the additional coordination which may be required because of multiple contractors, and because of the potential for disruption to a construction schedule, home builders may be reluctant to offer home networking systems to home buyers.

15 In addition, standards may not exist for the design and installation of home networking systems, particularly with respect to low voltage wiring. For example, the design and installation of traditional electrical wiring, plumbing, and structural portions of a home are performed according to well known standards. Because of the lack of standards, home networking installations may be inconsistent from one

home to the next. Also, home builders may not have sufficient knowledge of the various home networking technologies desired by home buyers.

#### SUMMARY OF THE INVENTION

5        In view of the above discussion, methods of facilitating the design and installation of custom home networking systems within new and existing homes are provided. Information about a particular home design is obtained by an intermediary from floor plans (and/or other construction drawings/materials). The intermediary designs a home  
10      networking system infrastructure for the home using information obtained from the floor plans. Both objective and subjective information is obtained from the floor plans. Objective information includes information associated with measurable, physical parameters in the floor plans. Subjective information includes information that is interpreted by the intermediary as being relevant to a custom home networking system for a particular home  
15      design, such as the arrangement and type of rooms in the floor plans.

20      The home networking system infrastructure designed by the intermediary includes the layout and arrangement of a plurality of communications cables that extend from a network connection center to be located within the home and that terminate at respective outlets or devices to be located in one or more rooms of the home. The home networking system infrastructure also includes various types of outlets that are associated with communications and entertainment systems, such as telephone jacks, universal outlets, TV jacks, and speaker jacks. The home networking system infrastructure is configured to support various home networking system configurations that are selected by a homeowner.  
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30      The intermediary then presents the designed home networking system infrastructure to the homeowner via a workbook that includes descriptions of the various home networking system options that are supported by the home networking system infrastructure. The workbook includes a set of low voltage wiring diagrams for the home that identify the location of a central distribution panel (referred to hereinafter as a "network connection center") in the home and the locations and types of outlets and devices to be connected by cables and wires extending from the network connection center. The workbook also may include a price list  
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for the available home networking system options described therewithin.  
Using the workbook, the homeowner can select from various  
telecommunications options, various entertainment options, and various  
security options to produce a custom home networking system for the  
5 home.

For new construction, the intermediary may provide a builder  
with cost information associated with installing the custom home  
networking system within a particular home and may integrate a schedule  
for installing the custom home networking system into the builder's  
10 construction schedule. The intermediary may also monitor installation of a  
custom home networking system for a particular home for compliance with  
regulations and standards, and with various schedules. For existing homes,  
the intermediary may act on behalf of the homeowner and coordinate  
installation of the custom home networking system with an installer. The  
15 intermediary may also monitor installation of the custom home networking  
system for compliance with regulations and standards, and/or with various  
schedules.

Upon installation of a custom home networking system, the  
intermediary facilitates the activation of components and/or services of the  
20 installed custom home networking system and may also provide the  
homeowner with an owner's manual contains information (e.g., operational  
information, warranty information, trouble shooting information, etc.)  
about the custom home networking system.

Embodiments of the present invention permit home  
25 networking systems to be selected, customized, and installed without  
disrupting the construction schedules of builders. Moreover, builders are  
not required to have detailed knowledge of the various components of  
home networking systems and need not become involved in the design  
and layout thereof. In addition, embodiments of the present invention  
30 facilitate the standardization of designing and installing custom home  
networking systems. As such, the installation of home networking systems  
can be consistent from one home to the next.

## BRIEF DESCRIPTION OF THE DRAWINGS

5      **Fig. 1** is front elevational view of an exemplary conventional cable distribution panel (network connection center) from which communications cables are routed to various outlets or devices of a home networking system.

10     **Fig. 2A** is a flow chart that illustrates methods of facilitating the design and installation of custom home networking systems within new homes, according to embodiments of the present invention.

15     **Fig. 2B** is a flow chart that illustrates methods of facilitating the design and installation of custom home networking systems within existing homes, according to embodiments of the present invention.

20     **Fig. 3** is an exemplary template into which objective and subjective information is input to produce a home networking system infrastructure, according to embodiments of the present invention.

25     **Fig. 4** is a floor plan for a portion of a home.

30     **Fig. 5** is a low voltage wiring diagram that schematically represents a home networking system infrastructure for the floor plan of **Fig. 4**.

35     **Figs. 6A-6C** provide keys for the various types of outlets and devices associated with the home networking system infrastructure of **Fig. 4**.

## DETAILED DESCRIPTION OF THE INVENTION

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

Referring now to **Fig. 2A**, methods of facilitating the design and installation of custom home networking systems within new homes, according to embodiments of the present invention, will be described.

35     Initially, an intermediary obtains various information from floor plans (or

other drawings/materials) for a particular home (or for a particular home design) (Block **100**). Both objective and subjective information can be obtained. Objective information refers to information associated with measurable, physical parameters (e.g., anything that can be physically measured) including, but not limited to, the number of doors in each room, the number of windows in each room, physical dimensions of each room, etc. Subjective information refers to information that is interpreted by a third party (e.g., the intermediary) as being relevant to a custom home networking system for a particular home (or home design). For example, information such as the recognition that two particular rooms are adjacent in a floor plan may have relevancy to the type of home networking system infrastructure and subsequent custom home networking system that can be installed in a home having this particular design. Other examples include the intended use of rooms (e.g., a den that also is going to be used as a bedroom), and the locations of various devices, including speakers, volume controls, and security system features (e.g., motion detectors for doors, and keypads).

Utilizing information obtained from the floor plans for a particular home (or particular home design), the intermediary designs a home networking system infrastructure for the home (Block **110**). According to embodiments of the present invention, subjective and objective information obtained from the floor plans is entered into a data processing system via one or more input templates. The data processing system then produces a home networking system infrastructure (or portions thereof) which may be considered appropriate for the particular home (or home design) based upon the various objective and subjective information.

An exemplary template **15** into which objective and subjective information may be input into a data processing system to produce a home networking system infrastructure, according to embodiments of the present invention, is illustrated in **Fig. 3**. Various templates may be utilized. The present invention is not limited to the illustrated template **15**. In addition, it is understood that a data processing system is not required for producing a home networking system infrastructure. An intermediary may utilize various objective and subjective

information and design a home networking system infrastructure without the aid of a data processing system.

The home networking system infrastructure designed by the intermediary includes the layout and arrangement of a plurality of communications cables that extend from a network connection center to be located within the home and that terminate at respective outlets or devices to be located in one or more rooms of the home. An exemplary network connection center is described in co-assigned and co-pending U.S. Patent Application Serial Number 09/621,434, which is incorporated herein by reference in its entirety. The home networking system infrastructure includes various types of outlets that are associated with communications and entertainment systems, such as telephone jacks, universal outlets, TV jacks, and speaker jacks. The home networking system infrastructure is configured to support various home networking system configurations that are selected by a homeowner.

According to embodiments of the present invention, the intermediary produces a document referred to as a "workbook" that describes and/or illustrates the home networking system infrastructure for a particular new home design and that includes descriptions of the various home networking system options that can be supported by the home networking system infrastructure (Block **120**). Selectable home networking system options may include various telecommunications devices and services, and/or entertainment devices and services, and/or security devices and services. The workbook preferably includes an initial set of one or more low voltage wiring diagrams for the particular home (or home design) that illustrate the home networking system infrastructure. Specifically, the low voltage wiring diagrams identify the location within the home of a network connection center from which various communications cables are to be distributed throughout the home. In addition, the low voltage wiring diagrams include the locations and types of outlets and devices within the various rooms of the home and at which a respective communications cable routed from the network connection center terminates.

To assist a homeowner in selecting options, the workbook may include price lists for the available home networking system options

that are supported by the home networking system infrastructure. The workbook may also include various other information that can be helpful to a homeowner in selecting options and coordinating installation of a custom home networking system.

5           The intermediary allows a homeowner to select home networking system options from the workbook to produce a custom home networking system for the home (Block **130**). The intermediary produces a revised set of low voltage wiring diagrams illustrating a home networking system infrastructure necessary to support the custom home networking  
10          system for the home (Block **140**). For example, the homeowner may not choose a device or system to be connected to every possible outlet set forth in the initial low voltage wiring diagrams.

15          According to embodiments of the present invention, the intermediary may also provide a builder with cost information associated with installing a custom home networking system within a particular home (Block **150**). Cost information provided to a builder may include a bill of materials and a price list for a particular custom home networking system.

20          According to embodiments of the present invention, the intermediary may integrate a schedule for installing a custom home networking system into a builder's construction schedule for a particular home (Block **160**). The intermediary may also monitor installation of a custom home networking system for a particular home for compliance with regulations and standards, and with various schedules (Block **170**).

25          Upon installation of a custom home networking system, the intermediary facilitates the activation of components and/or services of the installed custom home networking system (Block **180**). The intermediary may also provide a homeowner with an owner's manual for a custom home networking system that provides information (e.g., operational information, warranty information, trouble shooting information, etc.)  
30          about the custom home networking system (Block **190**).

35          Method steps described above with respect to **Fig. 2A** may be repeated for a plurality of homes being built by a builder within a subdivision. For example, an intermediary may enter into an agreement with a builder to be the provider of custom home networking systems for homes in the subdivision. The intermediary obtains the floor plans for each

home design being built in the subdivision and extracts objective and subjective information therefrom. Using the extracted information, the intermediary produces a home networking system infrastructure for each home design.

5           The intermediary produces a proposal for the builder which includes for each home design, a respective bill of materials, price list, and preliminary set of low voltage wiring diagrams which schematically illustrate a respective home networking system infrastructure for a particular home design. As described above, the low voltage wiring  
10          diagrams identify the location of a network connection center from which various communications cables are to be distributed throughout a home. In addition, the low voltage wiring diagrams include the locations and types of outlets and devices within the various rooms of a home and at which a respective communications cable routed from the network connection center terminates.

15          If the builder authorizes the intermediary to proceed, the intermediary prepares a workbook (also referred to as a "Welcome Package") for each respective homeowner in the subdivision. The workbook contains information about the various telecommunications, entertainment, and security options that are available for the homeowner's respective home. The workbook may include price lists for the available home networking system options that are supported by the home networking system infrastructure. The workbook may also include various other information that can be helpful to a homeowner in selecting options  
20          and coordinating installation of a custom home networking system. In addition, a home networking system designer may meet with each homeowner to assist the homeowner in customizing a home networking system.

25          Once a homeowner has selected a custom home networking system, the intermediary coordinates installation of the custom home networking system with the builder. The intermediary integrates the schedules of installers with the schedule of the builder for each respective home. In addition, the intermediary may monitor the installation of a custom home networking system in each respective home.

Referring now to **Fig. 2B**, methods of facilitating the design and installation of custom home networking systems within existing homes, according to embodiments of the present invention, will be described. Initially, an intermediary obtains various information from floor plans (or other drawings/materials) for an existing home (Block **200**), for example, from a homeowner. As described above, information obtained from the floor plans may include objective information and subjective information. The intermediary designs a home networking system infrastructure for the existing home using the information obtained from the floor plans (Block **210**), and with or without the aid of a data processing system.

As described above, the home networking system infrastructure designed by the intermediary includes a layout and arrangement of a plurality of communications cables that extend from a network connection center to be located within the home to respective outlets or devices to be located in one or more rooms of the home. The home networking system infrastructure includes outlets associated with communications and entertainment systems, such as telephone jacks, universal outlets, TV jacks, and speaker jacks. The home networking system infrastructure is configured to support various home networking system options that are selected by a homeowner.

As described above, the intermediary may produce a workbook that describes and/or illustrates the home networking system infrastructure, and that also describes various home networking system options that can be supported by the home networking system infrastructure (Block **220**). Selectable home networking system options may include telecommunications devices and services, and/or entertainment devices and services, and/or security devices and services. The workbook preferably includes one or more low voltage wiring diagrams for the home that illustrate the home networking system infrastructure. Specifically, the low voltage wiring diagrams identify the location within the home of a network connection center from which various communications cables are to be distributed throughout the home. In addition, the low voltage wiring diagrams include the locations and types of outlets within

the various rooms of the home and at which a respective communications cable routed from the network connection center terminates.

To assist a homeowner in selecting options, the workbook may include price lists for the available home networking system options that are supported by the home networking system infrastructure. The workbook may also include various other information that can be helpful to a homeowner in selecting options and coordinating installation of a custom home networking system.

The intermediary allows a homeowner to select one or more home networking system options from the workbook to produce a custom home networking system for the home (Block **230**). The intermediary then produces a revised set of low voltage wiring diagrams illustrating a home networking system infrastructure necessary to support the custom home networking system for the home (Block **240**). For example, the homeowner may not choose a device or system to be connected to every possible outlet set forth in the initial low voltage wiring diagrams.

The intermediary may act on behalf of the homeowner and coordinate installation of the custom home networking system with an installer (Block **250**). The intermediary may also monitor installation of the custom home networking system for compliance with regulations and standards, and/or with established schedules (Block **260**).

Upon installation of a custom home networking system, the intermediary may facilitate the activation of components and/or services of the custom home networking system (Block **270**). The intermediary may also provide a homeowner with an owner's manual for a custom home networking system that provides various information (e.g., operational information, warranty information, trouble shooting information, etc.) about the custom home networking system (Block **280**).

Referring now to **Fig. 4**, a floor plan **20** for a portion of a home is illustrated. The illustrated floor plan **20** sets forth the physical layout and dimensions of various rooms in a particular home. In addition, the locations of windows, doors, appliances, and various fixtures are indicated. Floor plans are well understood by those of skill in the art and need not be described further herein. It is understood that the term "floor plans", as used herein, may include various materials and drawings used in

the construction and/or remodeling of, homes and other structures, and are not limited to the illustrated floor plans of **Fig. 4**.

From a floor plan, such as the one illustrated in **Fig. 4**, an intermediary can obtain various objective and subjective information for use in designing a home networking system infrastructure. Exemplary objective information that may be obtained from the illustrated floor plan **20** includes the number of rooms, the number of windows and doors in each room, the physical dimensions of the rooms, and the locations of various appliances and fixtures to be installed within the home. Exemplary subjective information that may be obtained from the floor plan **20** includes recognition that the kitchen for the home is adjacent to the master bedroom, and that the second bedroom may be optionally utilized as a den.

The information obtained from the floor plan **20** of **Fig. 4** is then used by the intermediary in designing a home networking system infrastructure for the home that can support various home networking system options selected by the homeowner. **Fig. 5** is a low voltage wiring diagram **22** that schematically represents a home networking system infrastructure for the floor plan **20** of **Fig. 4**. In the illustrated low voltage wiring diagram **22**, the identity and location of various outlets and devices are provided. Each outlet or device is the termination point for a respective communications cable that extends from a network connection center **24**.

**Figs. 6A-6C** provide keys for the various types of outlets and devices associated with the home networking system infrastructure of **Fig. 4**. **Fig. 6A** provides a key for outlets and devices associated with communications options for a home networking system. **Fig. 6B** provides a key for devices associated with security options for a home networking system. **Fig. 6C** provides a key for outlets and devices associated with entertainment options for a home networking system. In **Figs. 6A-6C**, squares indicate that outlets and/or devices are standard for a particular home, diamonds indicate that outlets and/or devices are pre-wired for a particular home, and circles indicate that outlets and/or devices are optional for a particular home.

For example, in the home networking system infrastructure illustrated in **Fig. 5**, a network connection center **24** is located within a

walk-in closet **26** connected to the master bedroom **28**. Various telecommunications and entertainment services are run to the network connection center **24** from service providers. For example, cable television is provided to the network connection center **24** from a service provider.

5 Telephone service may also be provided to the network connection center **24** from a service provider. Services provided to the network connection center **24** are then distributed to various locations within the home via communications cables.

In the illustrated home networking system infrastructure, 10 telephone service is distributed to phone jacks (indicated by "P") in the master bedroom **28**, the kitchen **30**, and the two additional bedrooms **32**, **33**. Various services (e.g., telephone, data, television, and video) may be distributed to the universal outlets (indicated by "U") in the master bedroom **28**, the two additional bedrooms **32**, **33**, the family room **34**, and the garage **36**. Television service is distributed to the TV jack (indicated by "TV") in the kitchen **30**. Door phone service is distributed to the phone jack (indicated by "DP") on the outside wall of the living room **40**, adjacent the entry.

In-ceiling speakers (indicated by "IC") are located in the master bedroom **28**, the master bath **29**, the kitchen **30**, the dining room **38**, and the living room **40**. In-room speakers (indicated by "RF", "CC", "LF", "RR", "LR") are located in the family room **34**. Outside speakers (indicated by "OS") are located on the outside wall of the nook **31**. Music and/or other types of audio content is delivered to the various speakers from the network connection center **24**. Controls for the various speakers are also located throughout the home. For example, volume controls (indicated by "VC") are located in the master bedroom **28**, the master bath **29**, the kitchen **30**, the nook **31**, the dining room **38**, and the living room **40**. Wires associated with the volume controls are distributed to the various volume controls from the network connection center **24**.

In the illustrated home networking system infrastructure, security cameras (indicated by "SC") are located on the outside walls of the nook **31**, and the living room **40**. Motion detectors (indicated by "PIR") are located in the family room **34**, and the hall **37** leading to the garage **36**. Security system keypads (indicated by "KP") are located in the

master bedroom **28**, the living room **40**, and the hall **37** leading to the garage **36**. A siren (indicated by "SIR") is located in the hall **37** leading to the garage **36**. Wires associated with the security system are distributed to the various security system components from the network connection center **24**.

Once a home networking system infrastructure is designed, the intermediary prepares one or more home networking system options (or packages) for communications, entertainment, and security systems, from which a homeowner can select. Various home networking system options are listed below in **Tables 1-4**.

**Table 1** includes various options (packages) that a homeowner can select for a communications system portion of a custom home networking system. **Table 2** includes various options (packages) that a homeowner can select for a surround sound (entertainment) system portion of a custom home networking system. **Table 3** includes various options (packages) that a homeowner can select for a multi-room music (entertainment) system portion of a custom home networking system. **Table 4** includes various options (packages) that a homeowner can select for a security system portion of a custom home networking system. The various options represented by **Tables 1-4** may be presented to a homeowner (or potential homeowner) in the form of a workbook (also referred to as a "Welcome Package"), as described above.

**TABLE 1**

COMMUNICATION PACKAGES				
Features	Starter	Basic	Expanded	Total
Home Director Network Connection Center	Standard	Standard	Standard	Standard
Universal Outlets <sup>2</sup> (1 telephone jack, 1 data port, 2 cable connections)	Family Room	Family Room; Bedrooms (or equivalent)	Family room; Bedrooms (or equivalent)	Family Room; Bedrooms (or equivalent)
TELEPHONE FEATURES				
Phone Outlets	Bedrooms; Kitchen	Bedrooms; Kitchen	Bedrooms; Kitchen	Bedrooms; Kitchen
4 Phone lines	4 x 8	4 x All	4 x All	4 x All

Front Door Intercom Pre-wire	N/A	Standard	Standard	Standard
Front Door Intercom System	N/A	Optional	Optional	Standard
<b>VIDEO FEATURES</b>				
TV Outlet	Bedrooms	Kitchen	Kitchen	Kitchen
Local Antenna Pre-wire	Standard	Standard	Standard	Standard
Local Antenna	Optional	Optional	Standard	Standard
DIRECTV Pre-wire	Standard	Standard	Standard	Standard
DIRECTV System	Optional	Optional	Standard	Standard
Video Distribution inputs x outputs	Unamplified; 1 x 4	Amplified; 8 x 8	Amplified; 1 x 6	Amplified; 8 x 8
3 x 8 Multiswitch	Optional	Optional	Standard	Standard
1-Channel Modulator	N/A	N/A	Standard	Standard
<b>COMPUTER NETWORKING</b>				
8-Port Ethernet hub	N/A	Standard	Standard	Standard
8-Port Ethernet Switch	N/A	Optional	Optional	Optional
<b>MISCELLANEOUS</b>				
AC Power Distribution	N/A	N/A	Standard	Standard
Front Door/Backyard Safety Camera pre-wire	N/A	Standard	Standard	Standard
Front Door/Backyard Safety Cameras	N/A	Optional	Optional	Standard
Additional Universal Outlet(s)	Optional	Optional	Optional	Optional
Customer Orientation	Standard	Standard	Standard	Standard
Price	See Price List	See Price List	See Price List	See Price List

**TABLE 2**

SURROUND SOUND PACKAGES				
Features	Pre-Wire	Basic Package	Expanded Package	Total Package
Left & Right Front Speaker Pre-Wire	Standard	Standard	Standard	Standard
Center Channel Pre-Wire	Standard	Standard	Standard	Standard
Left & right Rear Speaker Pre-Wire	Standard	Standard	Standard	Standard
Subwoofer Pre-Wire	Standard	Standard	Standard	Standard
Media Alcove Speaker Jacks	N/A (blank plate included)	Standard	Standard	Standard
Subwoofer Speaker Jacks	N/A (blank plate included)	Standard	Standard	Standard
Left & Right Front Speakers	N/A	6.5", entry-level speakers	6.5", mid-level speakers	6.5", "Reference" quality speaker
Center Channel Speaker	N/A	6.5", entry-level speakers	6.5", mid-level speakers	6.5", "Reference" quality speaker
Left & Right Rear Surround Speakers	N/A	6.5", entry-level speakers	6.5", mid-level speakers	6.5", "Reference" quality speaker
Location	Family Room	Family Room	Family Room	Family Room
Rear Speaker Trim (6.5", mid-level rear speakers, media alcove jack and subwoofer jack)	Optional	N/A	N/A	N/A
Price	See Price List	See Price List	See Price List	See Price List

**TABLE 3**

MULTI-ROOM MUSIC PACKAGES				
Features	Pre-Wire	Basic Package	Expanded Package	Total Package
Speaker Pre-Wire (to volume control, each zone)	Standard	Standard	Standard	Standard
Volume Control Pre-Wire (to volume control, each zone)	Standard	Standard	Standard	Standard
Speaker Distribution Module	Standard	Standard	Standard	Standard
Speaker Input Jacks (A-channel input)	N/A	Standard	Standard	Standard
Speaker Input Jacks (B-channel input)	N/A	Standard	Standard	Standard
Volume Control (in each zone)	N/A	Standard	Standard	Standard
Local A/B Switch (in Master Bedroom)	N/A	Standard	Standard	Standard
Pair of Speakers (located Master BR & Entry/Living Room) <sup>1,2</sup>	N/A	6.5", entry level speakers	6.5", mid-level speakers	6.5", "Reference" quality speakers
Additional Zone <sup>3</sup>	Optional	Optional	Optional	Optional
Price	See Price List	See Price List	See Price List	See Price List

**TABLE 4**

SECURITY PACKAGES				
Features	Starter Security	Basic Security	Expanded Security	Total Security
Exterior Doors	Pre-Wire & Contact Protected			
Operable Windows	N/A	Pre-Wire & Contact Protected	Pre-Wire & Contact Protected	Pre-Wire & Contact Protected
Alarm Panel	8-Zone, Standard	8-Zone, Standard	16-Zone, Standard	32-Zone, Standard
Motion Detector(s)	One Downstairs	One Downstairs	One Downstairs	One Downstairs; One Upstairs
Backup Security	Standard	Standard	Standard	Standard

Alarm Keypad(s)	One LED, Standard	One LED, Standard	One LCD, Standard	One LCD, Standard
Siren/Bell	One Indoor	One Indoor	One Indoor & One Outdoor	One Indoor & One Outdoor
Wireless Panic Button	N/A	Optional	Standard	Standard
Escort Telephone Interface Module	N/A	Optional	Optional	Standard
Programming	Standard	Standard	Standard	Standard
2 Year Security Monitoring Agreement	1st Year Included	1st Year Included	1st Year Included	1st year Included
Additional Alarm Keypad	Optional	Optional	Optional	Optional
Additional Motion Detector	Optional	Optional	Optional	Optional

The intermediary may also prepare a proposal for a builder that includes a description of a home networking system infrastructure for a particular home design (e.g., for a particular set of floor plans) and that includes available options that can be selected by individual homeowners. For example, **Tables 5-8** below provide information about the various communications system options that a homeowner can select for the home design of **Fig. 4**.

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**TABLE 5**

Digital Age™ Wiring Network - Basic DAWN™

Qty	Description	Wiring	Location
1	Universal Outlet	Dual RG-6, Dual CAT-5	Family Room
"X"	Telephone Outlets	CAT-5	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
"X"	TV Outlets	Single RG-6	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
1	DAWN™ Phone and Cable Distribution Panel		CDP
1	Telco and Cable Service Run	Dual RG-6, Dual CAT-5	POE to CDP

1	DirecTV Pre-wire with Service Box and Cover	Two Dual RG-6	POE to CDP
1	UHF/VHF/FM/HDTV Pre-Wire with Antenna Box and Cover	Single RG-6	POE to CDP
1	Customer Orientation		

**TABLE 6**

Digital Age™ Wiring Network - Expanded DAWN™

Qty	Description	Wiring	Location
1	Universal Outlets	Dual RG-6, Dual CAT-5	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
"X"	Telephone Outlets	Single CAT-5	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
1	Kitchen TV Outlet	Single RG-6	Kitchen
1	DAWN™ Phone and Cable Distribution Panel		CDP
1	Telco and Cable Service Run	Dual RG-6, Dual CAT-5	POE to CDP
1	DirecTV Pre-Wire with Service Box and Cover	Two Dual RG-6	POE to CDP
1	UHF/VHF/FM/HDTV Pre-Wire with Antenna Box and Cover	Single RG-6	POE to CDP
1	5-Port Ethernet Hub		Central Distribution Point
1	Front Door Intercom Pre-Wire	Single CAT-5	Front Entry
2	Security Camera Pre-Wires	One CAT-5, One RG-6	Front Entry and Back Yard
1	Customer Orientation		

**TABLE 7**

Digital Age™ Wiring Network - Total DAWN™

Qty	Description	Wiring	Location
"X"	Universal Outlets	Dual RG-6, Dual CAT-5	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
"X"	Telephone Outlets	Single CAT-5	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
1	Kitchen TV Outlet	Single RG-6	Kitchen
1	DAWN™ Phone and Cable Distribution Panel		CDP
1	Telco and Cable Service Run	Dual RG-6, dual CAT-5	POE to CDP
1	DirecTV Pre-Wire with Service Box and Cover	Two Dual RG-6	POE to CDP
1	UHF/VHF/FM/HDTV Pre-Wire with Antenna Box and Cover	Single RG-6	POE to CDP
1	5-Port Ethernet Hub		Central Distribution Point
1	Single Channel Audio/Video Modulator		Media Niche
1	Front Door Intercom Pre-Wire	Single CAT-5	Front Entry
2	Security Camera Pre-Wires	One CAT-5, One RG-6	Front Entry and Back Yard
1	Customer Orientation		

**TABLE 8**

5 Digital Age™ Wiring Network - Total DAWN™ Plus

Qty	Description	Wiring	Location
"X"	Universal Outlets	Dual RG-6, Dual CAT-5	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
"X"	Telephone Outlets	Single CAT-5	Bedrooms (Den, Loft, Retreat, Bonus, etc.), Family Room
1	Kitchen TV Outlet	Single RG-6	Kitchen

1	DAWN™ Phone and Cable Distribution Panel		CDP
1	Telco and Cable Service Run	Dual RG-6, Dual CAT-5	POE to CDP
1	DirecTV Pre-Wire with Service Box and Cover	Two Dual RG-6	POE to CDP
1	UHF/VHF/FM/HDTV Pre-Wire with Antenna Box and Cover	Single RG-6	POE to CDP
1	DirecTV Satellite System		Media Niche
1	5-Port Ethernet Hub		Central Distribution Point
1	Single Channel Audio/Video Modulator		Media Niche
1	Front Door Intercom System	Single CAT-5	Front Entry
2	Security Cameras	One CAT-5, One RG-6	Front Entry and Back Yard
1	Customer Orientation		

**Tables 9-16** below provide information about the various security system options that a homeowner can select for the home design of **Fig. 4**.

5

**TABLE 9**

## Basic Security Pre-Wire

Qty	Description	Wiring	Location
All	Pre-Wire Exterior Doors	22 Gauge/ 2 Conductor	All Exterior Doors
1	Pre-Wire Alarm Keypad	18 Gauge/ 4 Conductor	Garage Entry
1	Pre-Wire Motion Detector	22 Gauge/ 4 Conductor	Family Room
1	Pre-Wire Siren	18 Gauge/ 4 Conductor	Hallway

**TABLE 10**

## Total Security Pre-Wire

Qty	Description	Wiring	Location
All	Pre-Wire Exterior Doors and Operable Windows	22 Gauge/ 2 Conductor	All
3	Pre-Wire Alarm Keypad	18 Gauge/ 4 Conductor	Garage Entry, Master Bedroom, Front Entry
2	Pre-Wire Motion Detector	22 Gauge/ 4 Conductor	Family Room
2	Pre-Wire Siren	18 Gauge/ 4 Conductor	Hallway, Exterior

**TABLE 11**

## 5 Fire Safety Pre-Wire (Included with Total Security Pre-Wire)

Qty	Description	Wiring	Location
1	Pre-Wire Smoke/ Heat Detector	18 Gauge/ 4 Conductor	Hallway
2	Pre-Wire Heat Detector	18 Gauge/ 4 Conductor	Kitchen, Garage
1	Pre-Wire Sprinkler Flow Switch Contact	18 Gauge/ 4 Conductor	Sprinkler Panel

**TABLE 12**

## Basic Security System

Qty	Description	Location
1	Basic Security Pre-Wire	
All	Lower level exterior doors contact protected	
1	Basic 8-zone alarm panel with power supply	Master Bedroom Closet
1	Interior room protected with pet resistant motion detector	Family Room
1	Backup Battery	
1	8-zone Led Alarm Keypad	Garage Entry
1	Indoor Siren	Hallway

10

**TABLE 13**

## Expanded Security System

Qty	Description	Location
1	Expanded Security Pre-Wire	
All	Exterior doors and Windows contact protected	

1	Basic 8-zone alarm panel with power supply	Master Bedroom Closet
1	Interior room protected with pet resistant motion detector	Family Room
1	Backup Battery	
1	8-Zone LED Alarm Keypad	Garage Entry
1	Indoor Siren	Hallway

**TABLE 14**

## Total Security System

Qty	Description	Location
1	Total Security Pre-Wire	
All	Exterior Doors and Windows contact protected	
1	16-zone alarm panel with power supply	Master Bedroom Closet
1	Interior room protected with pet resistant motion detector	Family Room
1	Backup Battery	
1	LCD Alarm Keypad	Garage Entry
1	Wireless Panic Button	
1	Indoor Siren	Hallway
1	Outdoor Siren	Attic

5

**TABLE 15**

## Total Security System Plus

Qty	Description	Location
1	Total Security Pre-Wire	
All	Exterior Doors and Windows contact protected	
1	32-zone alarm panel with power supply	Master Bedroom Closet
2	Interior room protected with pet resistant motion detector	Family Room, Living Room
1	Backup Battery	
2	LCD Alarm Keypad	Garage Entry, Master Bedroom, or Front Entry
1	Telephone Interface Module	
1	Wireless Panic Button	
1	Indoor Siren	Hallway
1	Outdoor Siren	Attic

**TABLE 16**

## Fire Security System

Qty	Description	Location
1	Smoke/Heat Detector	Hallway
2	Heat Detectors	Kitchen, Garage
1	Connection to Existing Sprinkler Flow Switch Contact	Sprinkler Panel

Tables 17-20 below provide information about the various multi-room music (entertainment) system options that a homeowner can select for the home design of Fig. 4.

**TABLE 17**

## Multi-Room Music - Pre-Wire Only

Qty	Description	Wiring	Location
1	Speaker Distribution Module		Media Niche
1	Audio Cable to Distribution Module	16 Gauge/ 4 Conductor	Master Bedroom, Living Room
1	Control Cable to Distribution Module	22 Gauge/ 2 Pair Shield	Master Bedroom, Living Room
1	Audio Cable to Speakers	16 Gauge/ 2 Conductor	Master Bedroom, Living Room

**TABLE 18**

## Basic Multi-Room Music System

Qty	Description	Location
1	Multi-Room Pre-Wire (above)	
1	Local A/B Wall Switch	Master Bedroom
1	Left and Right Speaker Input jack	Next to Universal outlet in Master Bedroom
2	Impedance Matching Volume Control	Master Bedroom, Living Room
2 Pr.	6.5" Klipsch® Contractor Series In-Ceiling or In-Wall Speakers	Master Bedroom, Living Room

**TABLE 19**

## Total Multi-Room Music System

Qty	Description	Location
1	Multi-Room Pre-Wire (above)	
1	Local A/V Wall Switch	Master Bedroom
1	Left and Right Speaker Input	Next to Universal outlet in

	Jack	Master Bedroom
2	Impedance Matching Volume Control	Master Bedroom, Living Room
2 Pr.	6.5" Klipsch® Synergy Series In-Ceiling or In-Wall Speakers	Master Bedroom, Living Room

**TABLE 20**

Total Plus Multi-Room Music System

Qty	Description	Location
1	Multi-Room Pre-Wire (above)	
1	Local A/B Wall Switch	Master Bedroom
1	Left and Right Speaker Input jack	Next to Universal outlet in Master Bedroom
2	Impedance Matching Volume Control	Master Bedroom, Living Room
2 Pr.	6.5" Klipsch® Reference Series In-Ceiling or In-Wall Speakers	Master Bedroom, Living Room

5      **Tables 21-24** below provide information about the various surround sound music (entertainment) system options that a homeowner can select for the home design of **Fig. 4**.

**TABLE 21**

10     Surround Sound - Pre-Wire

Qty	Description	Location
1	Left front, Right front and Center In-ceiling or In-wall speaker Pre-Wire	Family Room
1	Subwoofer Pre-Wire	Family Room
1	Left rear and right rear In-ceiling speaker pre-wire	Family Room
1	Subwoofer blank single-gang plate installed at outlet level	At Subwoofer
1	Media alcove blank double-gang plate	Media Niche

**TABLE 22**

Basic Surround Sound Speaker System

Qty	Description	Location
1	Surround Sound Pre-Wire (above)	Family Room
1	Left and Right Front, Left and Right Rear, and Center Channel 6.5" In-ceiling or In-wall	Family Room

	surround sound Klipsch® Contractor speakers installed	
1	Media alcove speaker jacks	Family Room

**TABLE 23**

## Total Surround Sound Speaker System

Qty	Description	Location
1	Surround Sound Pre-wire (above)	Family Room
1	Left and Right Front, Left and Right Rear, and Center Channel 6.5" In-ceiling or In-wall surround sound Klipsch® Synergy Series speakers installed	Family Room
1	Media alcove speaker jacks	Family Room

5

**TABLE 24**

## Total Surround Sound Plus Speaker System

Qty	Description	Location
1	Surround Sound Pre-wire (above)	Family Room
1	Left and Right Front, Left and Right Rear, and Center Channel 6.5" In-ceiling/In-wall surround sound Klipsch® Reference Series speakers installed	Family Room
1	Media alcove speaker jacks	Family Room

A proposal prepared for a builder may also include cost information and a bill of materials for various options or packages that a homeowner can select for a particular home.

The intermediary may prepare a homeowner's manual that provides information about how the various portions of the custom home networking system operate, warranty information, and how to obtain service help.

The foregoing is illustrative of the present invention and is not to be construed as limiting thereof. Although a few exemplary embodiments of this invention have been described, those skilled in the art will readily appreciate that many modifications are possible in the exemplary embodiments without materially departing from the novel

teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention as defined in the claims. Therefore, it is to be understood that the foregoing is illustrative of the present invention and is not to be construed as limited to the specific embodiments disclosed, and that modifications to the disclosed embodiments, as well as other embodiments, are intended to be included within the scope of the appended claims. The invention is defined by the following claims, with equivalents of the claims to be included therein.

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